

Date: Wed, 14 Apr 93 11:31:56 PDT
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
Precedence: Bulk
Subject: Info-Hams Digest V93 #462
To: Info-Hams

Info-Hams Digest Wed, 14 Apr 93 Volume 93 : Issue 462

Today's Topics:

Building a J-pole
Comet phone number?
Copper Tube J-Pole
Hf Cabling ?
History question
Info On HF Rigs Needed (2 msgs)
LARC
Multiband Wire Antenna
RFD: rec.radio.amateur reorganization
Special Event Station - 17 April
STS-56 Element Set GSFC-021
TV Twin-lead J-pole

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 14 Apr 93 18:02:23 GMT
From: sdd.hp.com!hpscit.sc.hp.com!hpuerca.atl.hp.com!edh@hplabs.hpl.hp.com
Subject: Building a J-pole
To: info-hams@ucsd.edu

Okay. Since I got seven requests for the plans in a 20 minute
timeframe (all already responded to), I'll take it there is
some current net.interest and hereby notify r.r.a.m that I am
about to post three articles covering the plans I mentioned
before. To keep the plans "clean" of other garbage (so they
are easier to save and print (one side one page, by design),

I'll make my remarks here:

1. I hope someone enjoys building and using these antennas. The plans are not theory: I've built and used all these.
2. If you reprint these, please do not edit them down to a smaller size: I believe I've limited myself to a common information that cannot be substantially reduced.
3. Please do not remove my name from the articles: if there are problems/complaints I want to hear about them.
4. NOTE: I DO NOT claim to have invented/designed these! I have researched these designs at length and reduced the crucial construction information to a easily digested article.
5. There are other ways to build each of these. I only claim to have, by dint of research and experimentation to have hit upon a doable method. Experience with members of the Williamson County ARC (where I was in TX before I came to Atlanta and HP) proves that each of these antennas can be easily built and effectively used. If there are any gottchas, it is that the tv twin-lead j-pole must be carefully trimmed to tune; otherwise it is so-so.

Cheers & 73 Ed Humphries N5RCK
Hewlett-Packard NARC Atlanta GA
edh@hpuaerca.atl.hp.com

Date: Wed, 14 Apr 1993 17:18:17 GMT
From: europa.eng.gtefsd.com!gatech!udel!darwin.sura.net!news-feed-1.peachnet.edu!
umn.edu!csus.edu!netcom.com!jfh@uunet.uu.net
Subject: Comet phone number?
To: info-hams@ucsd.edu

Does anyone have the phone number for the people who distribute/support
Comet products? I think the company is called something other than
"Comet".

--

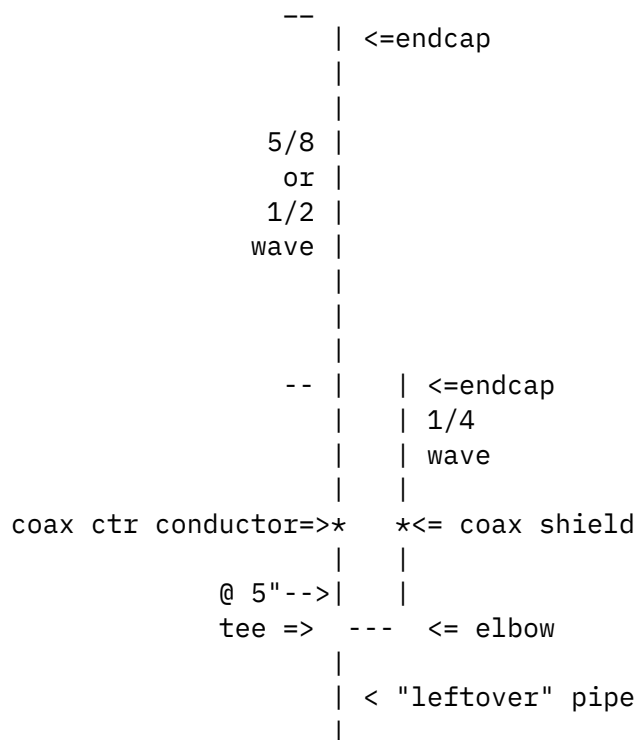
Jack Hamilton KD6TTL jfh@netcom.com PO Box 281107 SF, CA 94128 USA

Date: 14 Apr 93 18:13:37 GMT
From: sdd.hp.com!hpscit.sc.hp.com!hpuaerca.atl.hp.com!edh@hplabs.hpl.hp.com
Subject: Copper Tube J-Pole

To: info-hams@ucsd.edu

The Copper Tube J-pole
by Ed Humphries - N5RCK

The following is a description of a J-Pole antenna made from copper pipe. You can use 1/2 inch to 1 inch pipe (wall thickness will affect stiffness/stability AND price, but not performance). Larger diameter pipe increases bandwidth, but 1/2 inch is fine for amateur frequencies. Start with a 10 foot (standard) length of pipe, 1 90 degree (right angle) fitting, 1 "tee" fitting, 2 end-caps, 2 hose clamps (worm-gear adjustable of the appropriate diameter), and your coax (end stripped, braid separated, center conductor stripped, and coax sealant to close opening in coax to keep water out). Use a tube cutter (for best/easiest results) and cut the 10 foot pipe according to the dimensions needed following the diagram below:



For best general purpose use, the 5/8th wave version should be used. The dimensions to cut are: 66 1/2 inches (5/8 + 1/4 matching section), 19 inches (other half of 1/4 matching section), 3/4 inch (joins the tee and the elbow), and the "leftover" 33 3/4 inches that forms the base. Use standard plumbing solder methods to join main section to base using the tee. Use the 3/4 inch piece and the elbow to attach the 19 inch piece. Be careful to keep pieces parallel.

This will give you a center frequency of 146 MHz. Attach the coax

as shown using the hose clamps. Adjust the swr at 146 MHz by sliding the connections up or down as needed -- you should be able to reach very close to 1:1 (best to do this in approximately where you intend to use the antenna - the base can be attached directly to a mast by two hose clamps). Try not to be standing right by the antenna!

It has been noted that this design can lead to rf coupling onto the feedline. To avoid this, put a ferrite on the coax at the feedpoint, or use 3 turns (@1") of the coax taped together at the feedpoint.

Other center freq dimensions: (adjust 5/8 section accordingly).
144 =19.25 inches, 145 =19.12, 146 =19, 147 =18.86, 148 =18.73.

Date: Wed, 14 Apr 1993 15:34:52 GMT
From: haven.umd.edu!darwin.sura.net!gatech!wa4mei!ke4zv!gary@ames.arpa
Subject: Hf Cabling ?
To: info-hams@ucsd.edu

In article <734646324.AA08993@tdkt.kksys.com>

Vern.Suter@f100.n282.z1.tdkt.kksys.com (Vern Suter) writes:

>I have a couple questions regarding coax and my HF vertical antenna.
>I'm a new ham and have a Batternut HF6V vertical on the roof. The coax
>comes into the shack and connects to a switch setup that connects it
>to ground when disconnected from the HF rig. (This "ground switch"
>also has a couple of other antennas and radio attached to it.) It then
>goes to a static discharge type of unit. Then it goes to an A/B
>antenna switch so I can choose between my dummy load and the vertical.
>I understand that every time the coax is "switched" or "coupled" that
>it loses a significant amount of signal. Here's my question: is this
>setup too complex and am I losing too much signal? If so, what would
>be a better way? Maybe I should just come straight from the antenna to
>the rig and "unhook" when not in use. I tried to set the whole thing
>up for safety (lightning/grounding) and convenience but I really
>wonder about signal loss. All suggestions are appreciated. Thanks.

Well Vern, switch losses at HF are really minimal under most conditions so I wouldn't worry much about that as long as the switches are of good quality with adequate current handling and adequate isolation. $I = \sqrt{P/R}$ and $V = \sqrt{P \times R}$, so for the matched case a 100 watt signal into a 50 ohm impedance gives $\sqrt{100/50} = 1.414$ amperes and $\sqrt{100 \times 50} = 70.71$ volts. A legal limit signal would require a switch with a 5.48 amp carrying capacity and a voltage rating of 273.86 volts. High SWR can cause the current or voltage maxima to be much greater. Most any switch is suitable for 100 watt matched levels, but legal limit, and high SWR conditions, place greater restraints on voltage and current handling.

Isolation can be a tougher problem. Our enemies are capacitance, and in some cases inductive coupling. For many moderate to high current switches, there is a significant capacitance between the open contacts. This gets worse with increasing frequency as the reactance decreases. This is one reason the knife switch is popular. It has minimal capacitance between the contacts because of it's physical design. Inductive coupling can also play a part in reducing isolation. Usually, this is because of internal switch lead layouts that allow parallel, or nearly parallel coupling loops. This becomes less at higher frequencies as the reactance decreases. The best coax switches use a rotary butterfly contact in machined cavities. Few switches can maintain 30 db of isolation between contacts. Most are considerably worse. For a legal limit signal, 1.5 watts could be coupled where you don't want it to go with the best switches. Most receiver front ends would be unhappy at this level, and if you were using a dummy load, your antenna would still get a good QRP signal to radiate.

Then there's lightning. Now we're talking about 20,000 amps and up to 1 million or so volts (though RG-8 will flash over at about 8 kV and act as a voltage clamp). We have to be very careful in laying out cable systems that may be subjected to lightning. Coaxial switches don't break the shield path of the cables attached to them, so switching the radio to an open circuit doesn't give much lightning protection unless single point grounding practice is followed and good gas discharge suppressors are used. This is not always obvious because more than coaxes are involved in shack wiring. Power wiring, telephone wiring, accessory interconnect cables, etc can all form part of a ground loop for lightning currents. Any ground loop is an invitation to disaster.

The usual professional method of dealing with these problems is to use a ground "window" approach to all cables entering and exiting the shack. This is one small area where all cables terminate in suppressors and where all shack grounds are terminated. This ground window is tied directly to a good earth ground by a heavy and straight cable. For best results, this plate should be mounted on an outside wall. For switching, most professional stations use a patch bay. There are two kinds of patch bay, insulated and grounded. Insulated bays can be very useful in breaking any inadvertent ground loops, and the grounded bays can serve as part of the ground window. The simplest patch bay is a rack panel with a bunch of BNC chassis feedthru female connectors mounted through it. You can then use short patch cords to connect anything to anything else. For an insulated bay, use plexiglass for the panel. To avoid mutual coupling, it's best to put all low level connections on one end of the panel and all high level connections on the other. Also resist the temptation to neatly dress your cables in bundles. This increases mutual coupling.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

Date: Wed, 14 Apr 1993 15:22:06 GMT
From: sdd.hp.com!nigel.msen.com!spool.mu.edu!howland.reston.ans.net!agate!linus!
linus.mitre.org!mwvm.mitre.org!m14494@network.UCSD.EDU
Subject: History question
To: info-hams@ucsd.edu

There's an important distinction between *electronic* amplification and *electrical* amplification. Bell gave public demonstrations of his telephone in the late 1800s using special receivers optimized for loudness. These were, however, not "electronic" in the usual sense of using active devices like vacuum tubes or transistors, but purely "electrical" in that they used only passive devices.

Mike, N4PDY

* These are my opinions only.*

Date: Wed, 14 Apr 1993 13:53:08 GMT
From: gumby!news.cs.andrews.edu!zds-oem!sims@uunet.uu.net
Subject: Info On HF Rigs Needed
To: info-hams@ucsd.edu

The amateur radio club I belong to wants to purchase some new HF gear. The rigs they are looking at are the Yeasu FT-780, and the Icom IC-737. They both look nice and have comperable specs, but other than the spec sheets, no one I know has one or can offer any other info on them. There primary use would be contesting, but they would be used for emergency equipment if there was a need.

Does anyone have any practical experience (or know of anyone who has) with these rigs?? All information is welcome (flames if you got them). Also, if you know of anyone with a good price, tell me (we are looking at about \$1100).

Thanks in advance.

Mike Sims, KA9KIM

Jack Hamilton KD6TTL jfh@netcom.com PO Box 281107 SF, CA 94128 USA

Date: 14 Apr 93 18:08:07 GMT
From: sdd.hp.com!hpscit.sc.hp.com!hpuerca.atl.hp.com!edh@hplabs.hpl.hp.com
Subject: Multiband Wire Antenna
To: info-hams@ucsd.edu

Multiband Wire Antennas
By Ed Humphries - N5RCK

The March 1991 issue of CQ Amateur Radio contained yet another discussion of multiband wire antennas. In his column "Radio FUNdamentals", Bill Orr, W6SAI writes about the original W9CXX multibander with its' complex copper tubing matching section. He then goes on to discuss the popular G5RV developed by R. Varney, which is widely built and commercially available. Orr points out the deficiencies of the G5RV: when built in the original design it delivers reasonable SWR on the 7, 14, and 24 MHz bands, but into a 75 ohm coax feedline that is awkward to load up on modern transceivers; when built with 50 ohm coax the SWR is poor on all bands, but it performs reasonably well when used with a "transmatch" antenna tuner.

The column skips over an intermediate antenna design discussed in the March 1986 issue of Ham Radio. Bill's column back then pointed out that W5ANB first proved you could successfully modify the G5RV, load it with 50 ohm coax and run without any antenna tuner. But the best design (so far HI) he discusses in both articles is the one by ZS6BKV. Brian Austin used computer modeling to help him design a 5 band tuner-less antenna. Orr's CQ column reprints the design using only the dimensions for a 300 ohm matching section (I presume TV flat lead qualifies). In his original column Orr also presented the figures for using 400 (handmade open-wire leads) or 450 ohm (ladder-line) as the matching section. Since 450 ohm ladder-line is somewhat stronger than the commonly available 300 ohm TV lead-in, I'm here giving both sets of figures so you can make your own choice.

< 90' 3" for 450 ohm matching section or 92' 2" for 300 ohm >
o-----o

The ZS6BKV Antenna

||
||
||
|| 40' for 450 ohm
||
|| 36' 9" for 300 ohm

||
||

At the end of the matching section Orr recommends a 1:1 balun; others would say that several loops of coax at the feedpoint will do as well to help keep rf off the feedline. The feedline to the transceiver is common 50 ohm coax; RG 58/U is fine for hf for most runs. This antenna should give low SWR on 7, 14, 18, and 24 MHz bands. At 28 MHz the SWR is really only good from 28.5 to 29.0. Tests showed the best SWR curves when the antenna was erected at about 42 feet above ground. When run as an inverted-V (90 degree) the resonant frequency came down 80 kHz for 14 MHz and 125 kHz for 24 and 28 MHz. The March '86 article printed SWR curves, and the March '91 article printed field patterns for all 5 covered bands.

Date: 14 Apr 93 11:10:58 EDT
From: haven.umd.edu!darwin.sura.net!sgiblab!wetware!spunky.RedBrick.COM!psinntp!
psinntp!arrl.org@ames.arpa
Subject: RFD: rec.radio.amateur reorganization
To: info-hams@ucsd.edu

In news.groups, jgt10@uts.amdahl.com (John G. Thompson) writes:

>jbloom@arrl.org (Jon Bloom) writes:

>

>[...]

>>r.r.a.instruction: I'd like to see this broadened to include all kinds
>> of beginner-oriented discussion, not just licensing issues. One of
>> the questions I've asked myself in looking at this list of newsgroups
>> is, "if I were a newbie wanting to ask a question, where would I post
>> it?" I don't think the answer is clear given the above list of
>> groups. Therefore, I propose the following:

>

>> Change r.r.a.instruction
>> to r.r.a.beginner

>

>> with the charter: Discussion of questions and answers (both technical
>> and nontechnical) from newcomers to amateur radio, licensing procedures
>> and schedules, instruction, and educational uses of amateur radio.
>> [This includes all topics in the original proposed charter for
>> r.r.a.instruction.]

>

>Except that r.r.a.beginner doesn't broaden the group it narrows the
>group. What about discussions of upgrading your current license?
>Where does that discussion go? If anything it sound like the charter
>needs to be expanded to be more specific about the things to be discussed.

>

>r.r.a.instruction charter: Discussion of instruction and educational
>materials and methods, examination and licensing procedures for new and
>existing hams. Schedules of time, locations and costs for examinations
>and mean time to license arrival. Location and composition of question
>pools for the exam elements.

I have no problem with that, except that it still doesn't provide a place specifically for beginners, which I think is needed. Beginners tend to find it difficult to categorize their questions. That's one reason why you see so many beginners' packet questions in r.r.a.misc, for example. If we want to provide an environment friendly to the beginner--and I think we do--we can best do so by giving them a place to read and post that specifically addresses their questions about all of ham radio, not just licensing. And in any case, I think most of the licensing discussion is about beginner licensing anyway. If that discussion takes place in a beginner's group, what little is left can easily be handled in r.r.a.misc.

>Another possible name for the news group could be r.r.a.education.
>As names go this might better target the idea of the group. Any takers?

It doesn't target the group *I* want to have.

>> Since those who want to discuss instructional material are usually
>> either those asking for or those providing beginner's info, this seems
>> like a logical coupling of needs.

>

>The logical place to begin is with the group charter, the FAQ and the
>introduction to the r.r.a heirarchy postings. The things that a newcomer
>to the group (but not necessarily netnews) would look for. If you think
>it is a problem for newcomers to find the information then support a weekly
>posting of the introductory postings.

I'm talking about chartering a group that gets beginners together with the folks who provide them with answers and support. By "beginners" I mean newcomers to ham radio. They may or may not be newcomers to netnews. If we name such a group r.r.a.beginners, I suggest we won't have to rely on periodic postings to lead beginners to the appropriate starting point. It's perfectly clear from reading not just the r.r.a hierarchy but others as well that FAQ and other periodic postings have only limited success in directing people to the right places. So what's wrong with establishing groups and picking group names that *do* provide direction if the resulting group can stand on its own with respect to traffic volume?

>[...]

>

>>r.r.a.construction: I think some of the support for option II comes
>> about because there doesn't seem to be a place for wide-ranging
>> technical discussions. I think the charter of r.r.a.construction
>> allows for such discussion, but again, the *name* of the group
>> doesn't do a good job of indicating that.
>
>What about the charter for r.r.a.misc? That allows for wide ranging
>technical discussions. What is the problem with using r.r.a.misc?

Simply that r.r.a.misc is too broad-brush. Discussion areas that have significant traffic volume should be in a unique newsgroup. That best serves both those who want to read about that subject and those who don't. I question whether construction by itself will support enough traffic. And at the same time, I think general technical discussion, if it's placed in r.r.a.misc, will have a large enough volume to annoy the r.r.a.misc readers who aren't interested while not being a high enough percentage of the total r.r.a.misc to allow the techies to efficiently filter the technical postings from the other r.r.a.misc stuff. So, since construction is a subset of the subject of technical matters, I think they should go together in a newsgroup.

Jon Bloom, KE3Z | jbbloom@arrl.org
American Radio Relay League | Justice is being allowed to do whatever
225 Main St. | I like. Injustice is whatever prevents
Newington, CT 06111 | my doing so. -- Samuel Johnson

Date: 14 Apr 93 13:33:22 GMT
From: news-mail-gateway@ucsd.edu
Subject: Special Event Station - 17 April
To: info-hams@ucsd.edu

Cadet Amateur Radio Club Station W2KGY will operate a Special Event Station from Constitution Island on April 17, 1993 from 1400Z - 2000Z to commemorate the role that the island has played in American history. Operation will be on the following phone subbands (MHz):

3.85-3.86
14.225- 14.235
21.30-21.31
28.30-28.31 (Conditions Permitting)

Constitution Island is located approximately 100 Km north of New York City on the Hudson River. It is directly adjacent to West Point and is the site of the first fortifications authorized by the Continental Congress during the American Revolution. It served as one of the first 'Veterans Hospitals' after the revolution. In the later half of the 19 Century, it was the home of the Warner Sisters -- well known American authors with over

100 books to their credit. The island was donated to the US Government in 1908 for use by the US Military Academy at West Point.

QSL Information -- Send Business sized SASE to:

Department of EE&CS
United States Military Academy
ATTN: OIC, Cadet Amateur Radio Club
West Point, NY 10996

Hope we hear you on the air. 73, Mark. (aa2ma)

--

MAJ Mark Morgida

D/EE&CS, USMA

West Point, NY 10996

Internet: dm8981@eecs1.eecs.usma.edu

Packet: aa2ma @ kd2lh.#eny.ny.usa.na

Amprnet: aa2ma@w2kgy.ampr.org

Date: 14 Apr 93 15:51:17 GMT

From: news-mail-gateway@ucsd.edu

Subject: STS-56 Element Set GSFC-021

To: info-hams@ucsd.edu

SB SAREX@AMSAT \$STS-56.018

STS-56 Element Set GSFC-021

Enclosed is the latest Keplerian data for STS-56 as generated by Ron Parise, WA4SIR at the Goddard Space Flight Center. Element Set GSFC-021 is currently 4 seconds earlier than set GSFC-019.

STS-56

1	22621U	93 23	A	93104.25176571	0.00045467	00000-0	13024-3	0	216
2	22621	57.0049	151.0369	0003961	279.5591	80.5039	15.92828848		978

Satellite: STS-56

Catalog number: 22621

Epoch time: 93104.25176571 (14 APR 93 06:02:32.56 UTC)

Element set: GSFC-021

Inclination: 57.0049 deg

RA of node: 151.0369 deg Space Shuttle Flight STS-56

Eccentricity: 0.0003961 Keplerian Elements

Arg of perigee: 279.5591 deg

Mean anomaly: 80.5039 deg

Mean motion: 15.92828848 rev/day Semi-major Axis: 6672.5032 Km

Decay rate: 0.45E-03 rev/day*2 Apogee Alt: 296.76 Km

Epoch rev: 97 Perigee Alt: 291.47 Km

NOTE - This element set is based on NORAD element set # 021.
The spacecraft has been propagated to the next ascending
node, and the orbit number has been adjusted to bring it
into agreement with the NASA numbering convention.

Submitted by Frank H. Bauer, KA3HDO for the SAREX Working Group

/EX

Date: 14 Apr 93 18:18:23 GMT
From: sdd.hp.com!hpscit.sc.hp.com!hpuerca.atl.hp.com!edh@hplabs.hpl.hp.com
Subject: TV Twin-lead J-pole
To: info-hams@ucsd.edu

A TV Twin-lead J-pole
by Ed Humphries - N5RCK

The following is a description of a J-Pole antenna made from 300 ohm
TV twin-lead. They have quite a few advantages which include improved
performance for 2-meter HTs, portability, and low cost.

```

| | do not short this end.
| | (when trimming for vswr, cut both sides)
| |
| |
3/4 | | Technically-speaking, this is a 1/2
wave | | wave end-fed antenna with a 1/4 wave
| | matching section.
| |
| | 1/4" gap
| | (trim for vswr _below_ gap)
| | 1/4
| | wave
| |
coax ctr conductor=>* *<= coax shield
1 1/4"-| |
-*-* solder the twin leads together at bottom
```

For a center frequency of 146 MHz:

1. Start with @54" of TV twin lead (flat, NOT foam core)
2. Strip 1/2" of insulation at bottom and solder wires together.
3. Measure 1 1/4" from soldered wires and strip insulation on both

- sides. This is the solder point for a coax feedline.
4. Measure 16 3/4" from coax shield solder point and cut out 1/4" notch.
 5. Measure 50 1/3" from coax center conductor solder point and trim off twin lead at that point.
 6. Feed with a length of RG58U coax. Tape coax at feedpoint to the twin lead for strength and seal coax for weather protection.

To get the best possible match, in step three above simply MARK the "solder points" and measure from the mark for step 4 and 5. Now solder straight pins to your conductor and your shield. Insert the pins at the marked point and test for VSWR at the design frequency (146MHz). If necessary, probe up or down till you reach 1:1 (close as possible). Solder at the best points. To try this, you may want to start with the twin lead a little long and trim down to resonant length - note: you'll need to trim in a 3:1 ratio to maintain the 3/4 to 1/4 wave.

It has been noted that this design can lead to rf coupling onto the feedline. To avoid, put ferrite beads on the coax at the feedpoint, or use 3-5 turns of coax (1"-2") taped together at the feedpoint.

You may attach an alligator clip to the plastic on the top of the antenna in order to easily hang it. Alternately, punch a hole near the top and use a length of fishing line to hang.

This design appears on many BBSs, in club newsletters, and in books; the earliest reference that I know of is a Jan. 1984 D.A.R.C. antenna article by James Burks, KA5QYV. This antenna is relatively broad-banded and will be more than adequate if simply built as noted in steps above.

FYI, the 1/4 wave sections for other center frequencies are:
144 MHz =17 inches, 145 =16.88, 146 =16.75, 147 =16.65, 148 =16.54

I usually just go ahead and solder the coax in place and trim down to as close to 1:1 vswr as I can get. I use the MFJ vhf antenna analyzer and a frequency counter then afterwards test with a radio and in-line swr/power meter. When done, the antenna should also present 1:1.2-3 vswr in the center of 444MHz band as well (demonstrated on my dual-band meter and Alinco DJ-580).

End of Info-Hams Digest V93 #462
